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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,136

06/09/2005

Takeshi Kimura

05361/GH

1531

1933 7590 11/29/2007  
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EXAMINER

SINCLAIR, DAVID M

ART UNIT

PAPER NUMBER

4125

MAIL DATE

DELIVERY MODE

11/29/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/538,136	<b>Applicant(s)</b> KIMURA ET AL.	
	<b>Examiner</b> David M. Sinclair	<b>Art Unit</b> 4125	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/09/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10538136, filed on 06/09/2005.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “conductive paste”, “conductive particles”, “conductive powder”, “resin”, and “flow chart showing the method” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

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of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The disclosure is objected to because of the following informalities: grammatical errors.

Such as "a conductive conventional particles" - page 4 lines 12-13 should be "conductive conventional particles"

Appropriate correction is required.

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2 and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Machine Translation of Shioya et al. (JP 10-172346) hereafter referred to as MT\_Shioya '346.

In regards to claim 1,

A multilayer ceramic electronic part having an external electrode (3 – see fig.1) formed from a thermosetting conductive paste ([0010] – a thermosetting resin would make the conductive paste thermosetting) comprising conductive particles (4 – see fig. 1) having a high melting point ([0009]), metal powder (5 – see fig. 1) having a melting point of 300 °C or less ([0013] – teaches indium or tin as the surface substance both elements have a melting point of less than 300 °C) and a resin (6 – see fig. 1).

In regards to claim 2,

The multilayer ceramic electronic part according to claim 1, wherein the total content of said conductive particles having a high melting point and said metal powder having a melting point of 300 °C or less in said thermosetting conductive paste is in the range of 70 to 95% by weight relative to the total weight of said conductive particles having a high melting point, said metal powder having a melting point of 300 °C or less, and said resin (MT\_Shioya '346 teaches the conductive portion (conductive powder and conductive particles) being 100 weight parts and the resin being 30 weight parts therefore the conductive portion compose 76.9% by weight relative to the total weight of said conductive particles having a high melting point, said metal powder having a melting point of 300 °C or less, and said resin).

In regards to claim 4,

- (1) providing a thermosetting conductive paste ([0010] – a thermosetting resin would make the conductive paste thermosetting) comprising conductive particles (4 – see fig. 1) having a high melting point ([0009]), metal powder (5 – see fig. 1) having a melting point of 300 °C or less ([0013] – teaches indium or tin as the surface substance both elements have a melting point of less than 300 °C) and a resin (6 – see fig. 1), and a ceramic composite body which is to be provided with an external electrode ([0015]);
- (2) printing or applying said thermosetting conductive paste on or to a surface where an internal electrode of said ceramic composite body is led out ([0015]); and
- (3) maintaining said ceramic composite body obtained in the step (2) at a temperature of 80 °C to 400 °C for a period of one to sixty minutes so as to form the external electrode ([0015]).

In regards to claim 5,

The multilayer ceramic electronic part according to claim 4, wherein said conductive particle in said external electrode makes a diffused junction with a metal of said internal electrode of said multilayer ceramic composite body (the diffused junction is caused by the method of manufacturing therefore the method taught by MT\_Shioya '346 which teaches the method of claim 4 would also inherently create a diffused junction between the internal and external electrodes).

In regards to claim 6,

The multilayer ceramic electronic part according to claim 4, wherein said multilayer ceramic electronic part is selected from the group consisting of a capacitor, a capacitor array, a thermistor, a varistor, an LC composite part, a CR composite part, an LR composite part, and an LCR composite part ([0001]).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over MT\_Shioya '346 in view of Shaheen (4,233,103).

In regards to claim 3,

The reference as applied above to claim 1 teaches all the limitations except, a content of said metal powder having a melting point of 300 °C or less in said

thermosetting conductive paste is in the range of 5 to 20% by weight relative to the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300 °C or less.

Shaheen '103 teaches a gallium-tin eutectic being combined with gold. Shaheen '103 teaches the weight percent of the gallium-tin eutectic being 20-80% and the weight percent of the gold being 80-20% (column 1 – lines 49-52). Therefore Shaheen '103 teaches the metal powder (gallium-tin eutectic) having a melting point of 300 °C or less being 20% by weight relative to the total weight of said conductive particles (gold) having a high melting point and said metal powder (gallium-tin eutectic) having a melting point of 300 °C or less.

It would have been obvious to one of ordinary skill in the art at the time of the invention to try the ratio of Shaheen '103 in combination with MT\_Shioya '346 to obtain an “improved” conductive paste.

In regards to claim 7,

The reference as applied above to claim 2 teaches all the limitations except, a content of said metal powder having a melting point of 300 °C or less in said thermosetting conductive paste is in the range of 5 to 20% by weight relative to the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300 °C or less.



Shaheen '103 teaches a gallium-tin eutectic being combined with gold. Shaheen '103 teaches the weight percent of the gallium-tin eutectic being 20-80% and the weight percent of the gold being 80-20% (column 1 – lines 49-52). Therefore Shaheen '103 teaches the metal powder (gallium-tin eutectic) having a melting point of 300 °C or less being 20% by weight relative to the total weight of said conductive particles (gold) having a high melting point and said metal powder (gallium-tin eutectic) having a melting point of 300 °C or less.

It would have been obvious to one of ordinary skill in the art at the time of the invention to try the ratio of Shaheen '103 in combination with MT\_Shioya '346 to obtain an “improved” conductive paste.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gallagher et al. (5,853,622) teaches a conductive adhesive comprising a high melting point metal or metal alloy powder, a low melting point metal or metal alloy powder, and a resin. Gallagher '622 teaches the high melting point metals being metals such as copper, silver, gold, etc. Gallagher '622 teaches low melting point metals being metal such as tin, lead, etc. Gallagher '622 teaches the high melting point metal comprising 70% by weight of copper and 5% by weight silver.

Gallagher '622 teaches the low melting point metal being 25% by weight eutectic tin-lead alloy.

***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Sinclair whose telephone number is (571) 270-5068. The examiner can normally be reached on Mon - Fri 7:30-5, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHARLES D. GARBER can be reached on (571) 272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. M. S./

/Charles D. Garber/

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Supervisory Patent Examiner, Art Unit 4125